BURAVLEV, Yuriy Matveyevich; KCRITSKIY, V.G., retsenzent; IVANOVA, T.F., retsenzent; SKORNYAKOV, G.P., red.; KRYZHOVA, M.L., red. izd-va; MATLYUK, R.M., tekhn. red.

[Effect of structure on the results of the spectrum analysis of alloys] Vliianie struktury na rezul'taty spektral'nogo analiza splavov. Moskva, Metallurgizdat, 1963. 151 p. (MIRA 16:8)

(Alloys--Metallography) (Spectrum analysis)

SKORNYAKOV, G.P.

Fourth Conference on Spectroscopy. Opt. i spektr. 15 no.1:144 Jl '63. (MIRA 16:8)

(No subject headings)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001651110011-4"

ACCESSION NR: AP4011501 S/0051/64/016/001/0159/0161

AUTHOR: Eychis, A.Yu.; Skornyakov, G.P.

TITLE: Optical properties of gallium in the visible region of the spectrum

SOURCE: Optika i spektroskopiya, v.16, no.1, 1964, 159-161

TOPIC TAGS: gallium, gallium mirror, solid gallium, refractive index, absorption, reflection, photoconductivity

ABSTRACT: Among the metals, pure gallium is characterized by high specular luster in both the solid and liquid states. Moreover, gallium mirrors are not significantly impaired as regards reflecting properties as a result of exposure to air. Despite the obvious desirability of this metal for mirrors, the optical properties of gallium have not been adequately studied: there have been only a few measurements of some optical properties in the solid state and some more detailed measurements in the liquid state (J.Nathanson,Phys.Rev.49,887,1936; L.G.Schulz,J.Opt.Soc.Amer.47, 64,1957). Accordingly, in the present work there were measured the optical characteristics of gallium in the form of a bulk polycrystalline mirror. The measurements were carried out by the method of J.R.Beattie (Phil.Mag.46,235,1955) in the spectral

Card 1/2

ACC. NR: AP4011501

range from 4000 to 8000 Å. The average results for five series of measurements of the index of refraction n, the coefficient of absorption k and the coefficient of reflection R are tabulated and shown in Fig.1 of the Enclosure. The data for the solid gallium are compared with the results of Nathanson and Schulz for the liquid metal; significant differences are noted. Also investigated was the photoconductivity as a function of wavelength. The results for the solid specimen is shown by curve 1 in Fig.2 of the Enclosure. Curve 2 in this figure is based on the liquid state data of Schulz. The difference between the behaviors of the photoconductivity and reflection as a function of wavelength in the solid and liquid states is attributed to occurrence of interband quantum transitions, made possible by the energy band structure in the crystalline state. Orig.art.has: 2 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 15Apr63 DATE ACQ: 14Feb64 ENCL: 01

SUB CODE: PH NR REF SOV: 002 OTHER: 008

Card 2/3

SKORNYAKOV, G. V.

10
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RML

Emission of γ-rays during disintegration of μ-mesons. G. V. Skornyakov (Phys. Tech. Inst., Acad. Sci. U.S.S.R., Leningrad). *Doklady Akad. Nauk. S.S.S.R.* 89, 431–4 (1953) (Engl. translation issued as *U.S. At. Energy Comm.* NSF-tr-32).—The probability of γ-ray emission is calcd. by assuming that the mass of the neutral particles emitted is equal to zero and using the interaction Hamiltonian of μ-mesons with the electron-neutrino field. H. R.

SKORNJAKOV, G.V.

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1872
AUTHOR SKORNJAKOV,G.V., TER-MARTIROSJAN,K.A.
TITLE The Three-Body Problem in the Case of Forces of Short Range. The Scattering of Neutrons of Low Energy by Deuterons.
PERIODICAL Žurn.eksp.i teor.fis,31,fasc.5, 775-790 (1956)
Issued: 1 / 1957

Also in connection with the problem of the motion of three nucleons with low energy E (if the characteristic dimensions of the system which are determined by the length $\lambda\!\!\!^{-} = \hbar / \sqrt{ME}$ surpass the effective radius r_o of forces) it is possible to use a similar development in series according to powers of r_o as is used in the problem of the motion of two nucleons. There now follows the application of the zero-th approximation of this decomposition which corresponds to the case $r_o \to 0$ (i.e. the theory by BETHE and PEIERLE for two nucleons) on the scattering of neutrons of low energy ($E_n < 20$ MeV) by deuterons. The bound state of three nucleons (H^3- and H^3-nuclei) is not investigated here.
In the approximation $r_o \to 0$ the wave function $\Psi(\vec{r}_1, \vec{r}_2, \vec{r}_3)$ of the system of three nucleons at $\varrho_{ik} = |\vec{r}_i - \vec{r}_k| \to 0$ (i,k = 1,2,3) satisfies the boundary condition $\left\{ d \ln(\varrho\Psi)/d\varrho \right\}_{\varrho = 0} = -\alpha$. The problem is here reduced to the solution of an integral equation for a function depending on three variables. (In the case of states with a certain moment the function depends only on

This [illegible] GREEN'S function. The solution [illegible] the wave function of the [illegible] integral equation can be solved [illegible]

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1884
AUTHOR SKORNJAKOV,G.V.
TITLE The Three-Body Problem with Forces with Short Range. II.
PERIODICAL Žurn.eksp.i teor.fis,31,fasc.6,1046-1054 (1956)
Issued: 1 / 1957

The present work describes an iteration method for the determination of the wave function and the binding energy of a system of three bodies in the case of forces with short range. G.V.SKORNJAKOV and K.A.TER-MARTROSJAN (Dokl.Akad. Nauk,106,425 (1956)) obtained an integral equation for the FOURIER-transformed wave function of three homogeneous bodies which is here explicitly written down for the bound state. If the potential $V(r)$ has an infinite effective radius r_o it is sufficient for the determination of the wave function in the entire space to know the eigenfunction $F(\vec{k}, \vec{r})$ at $r < r_o$. This makes it possible to use the iteration method for the determination of the eigenfunction F and the eigenvalue α if the characteristic dimensions of the system exceed the effective radius r_o of the forces considerably. The aforementioned integral equation can, like in the perturbation theory, be solved by the method of successive approximation. Already when determining the zero-th approximation of the wave function and of the eigenvalue r_o must be assumed to be finite. Every further approximation is obtained from the preceding one by multiple integration. In the case of $\alpha_o r_o \ll 1$ the practical solution of the problem by zero-th approximation will be sufficient.

Zurn.eksp.i teor.fis,31,fasc.6,1046-1054 (1956) CARD 2 / 2 PA - 1884

This method can easily be generalized for a system with three nucleons (H^3 - nucleus). The operator of the interaction of the nucleons in the H^3-nucleus is set up as the sum of the potentials of the interaction between all nucleon pairs. Besides, the potential of the interaction between two nucleons is looked upon as central, and also the isotopic invariance of the nuclear forces is presupposed. Under these conditions the conservation of the spin S and of the isotopic spin T holds in the three-nucleon system. In the ground state of the H^3-nucleus it holds that $S = T = 1/2$. Next, the wave function of the ground state and also the SCHROEDINGER equation are given. After very complicated and long computations a system of integral equations for the case of three nucleons is obtained from this equation. The potentials occurring therein are directly connected with the processes taking place in a system of two nucleons.
For the approximated solution of this system of equations the fact that the aforementioned potentials have a short range is used. Roughly estimated, r_o can be assumed to be about the same for all four potentials on this occasion. The system of integrations is then transformed and simplified. In this way a system of two integral equations for two potentials is obtained. The necessary computations are discussed step by step.

INSTITUTION: Leningrad Physical-Technical Institute of the Academy of Science in the USSR

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001651110011-4"

Skornyakov G. V.

7943

SOLUTION OF THREE-NUCLEON MOTION PROBLEM IN THE LIMITING CASE OF SHORT RANGE FORCES. G. V. Skornyakov and K. A. Ter-Martirosyan (Leningrad Physico-Technical Inst.). Doklady Akad. Nauk S.S.S.R. 106, 425-8 (1956) Jan. 21. (In Russian)

The three-nucleon problem permits similar disintegrations in series by degrees r_e, where $r_e/\chi < 1$ and $\alpha r_e < 1$, where $\chi = \hbar/\sqrt{ME}$, and E is the energy of the system. This disintegration may be used in the investigation of neutron scattering by small-energy deuterons (up to 10 to 15 Mev) and for projecting the wave functions of nuclei H^3 and He^3. (R.V.J.)

SKORNYAKOV, G. V.

Distr: 4E3d
3362
THREE BODY PROBLEM FOR SHORT RANGE FORCES.
SCATTERING OF LOW ENERGY NEUTRONS BY DEUTERONS. G. V. Skornyakov and K. A. Ter-Martirosian.

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1989

THE THREE BODY PROBLEM FOR SHORT RANGE FORCES II. G. V. Skornyakov (Academy of Sciences, USSR). Soviet Phys. JETP 4, 910-17(1957) July.

An iteration method is proposed for finding the wave function and binding energy of a three body system for the case of short range forces. The method is applied to the ground state of H^3. (auth)

24.7330 (1147, 1538)

S/057/62/032/003/001/019
B154/B102

AUTHOR: Skornyakov, G. V.

TITLE: Some problems of the magnetic field topology

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 3, 1962, 261 - 268

TEXT: The author first discusses the existence of singular points in magnetic fields on surfaces which form a layer of certain thickness enclosing a certain volume. Such fields are of interest for the magnetic heat insulation of a plasma, and it is necessary in this case that the range of this enclosed volume is free from magnetic lines of force. This demand is fulfilled by surfaces on a homeomorphous tore (Ref. 2: V. V. Nemytskiy, V. V. Stepanov, Kachestvennaya teoriya differentsial'nykh uravneniy. GITTL, 1949. - Ref. 5: Aleksandrov, P. S. Kombinatornaya topologiya. GITTL, 1947.). If on such magnetic surfaces the number μ of rotations, which is the most important characteristic of the behavior of the magnetic field, is rational, then at least one closed line of force exists which is a limited cycle for the magnetic field lines inclined toward the surface considered. If μ is irrational, then such a closed

Card 1/4

S/057/62/032/003/001/019
B134/B102

Some problems of the ...

curve does not exist. To determine the distribution of the current on the inner surface the tore is formed by a sphere whose interior contains a thin web connecting opposite points of the sphere. If the web is arranged sufficiently close to the inner surface of the sphere, then the distribution of current on all surfaces of the sphere can be ascertained. In the present case, the web surrounds the radius of the sphere in a spiral so that the distribution of current on all surfaces corresponds to a spiral. Such a system can be considered as a model of plasma whose hydrodynamic stability is achieved by the relatively strong field in the surface region. Finally, the author discusses the effect of small disturbances on plasma fields. Considering only the vertical component, h, of the disturbing magnetic field, one obtains from the surface of the original field for the deviation, Δ, of a point on a magnetic line of force belonging to the disturbing field the following equation:

$$\Delta \simeq \varepsilon \int_{P_0}^{P} \frac{h}{H}\, dl = \varepsilon I, \qquad \text{(a)}$$

P_0 - intersection of the disturbing line considered and the surface.

After reflecting the toroidal surface on the square $0 \leq U_1 \leq 2\pi$; $0 \leq U_2 \leq 2\pi$

Card 2/4

Some problems of the ...

$$|m+\mu n|>\frac{\text{const}}{n},$$

$$|n|\geqslant 1 \qquad \text{(h)}$$

If the value of I is limited, then the value of μ changes within a limited range, a condition which is necessary and sufficient for the steadiness of the topology of a magnetic field. There are 5 Soviet references.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR Leningrad (Physicotechnical Institute imeni A. F. Ioffe AS USSR Leningrad)

SUBMITTED: November 13, 1961

S/057/62/032/007/001/013
B104/B102

24 2120

AUTHOR: Skornyakov, G. V.

TITLE: Some problems in the topology of a magnetic field. II

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 7, 1962, 777-781

TEXT: Referring to earlier papers (ZhTF, XXXII, 261, 1962) it is shown that a magnetic field generated by surface currents in a toroidal region which is limited by smooth superconducting surfaces is stable with respect to small disturbances. The behavior of a plasma in a magnetic field is studied in the absence of magnetic surfaces. The field structure of a magnetic trap which is to hold and heat-insulate a plasma for considerable time must comply with the following conditions: (1) The boundary layer of the toroidal magnetic field must be intransitive; the magnetic field in this layer must not be integrable. (2) At some distance from the boundary, the magnetic field must be transitive and the lines of force interwoven in a complex pattern.

B

Card 1/2

S/057/62/032/007/001/013
B104/B102

Some problems in the topology of ...

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR Leningrad (Physicotechnical Institute imeni A. F. Ioffe AS USSR, Leningrad)

SUBMITTED: March 10, 1962

B

Card 2/2

SKORNYAKOV, G.V.

One characteristic of plasma heating in toroidal systems. Zhur. tekh. fiz. 33 no.12:1477-1478 D '63.

Stability of the topology of a magnetic field. Ibid.:1478-1482 (MIRA 16:12)

1. Fiziko-tekhnicheskiy institut imeni A.F.Ioffe AN SSSR, Leningrad.

S/057/62/032/012/016/017
B104/B186

AUTHOR: Skornyakov, G. V.

TITLE: On the existence of magnetic surfaces

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 12, 1962, 1494-1495

TEXT: For studying the topology of a magnetic field the concept of magnetic surfaces is most useful, though it is only in special cases that the equations of the lines of force furnish integral surfaces. It is expedient to investigate approximated magnetic surfaces, from which the lines of force of the field deviate only to a small extent. In case there is an integrating factor of the equation of lines of force on the surface S_0 either the lines of force are closed or the whole of this surface is densely occupied by lines of force. Near such a surface it is possible to define a family of toroidal surfaces on which the normal component of the magnetic field strength is small of second order. If the number of rotations is changed, a corresponding surface of this family can be regarded as magnetic surface. If the number of rotations is irrational, the existence of an integrating factor is obvious. With a rational number of rotations and with a limited number of cycles an integrating factor cannot be defined. A finite

Card 1/2

number of cycles is, in its effects, a linear source and negative source on the magnetic surface for those lines of force that lie on the magnetic surface and within the space bounded by it. In the absence of an integrating factor a family of toroidal surfaces can be defined near an integral surface on which the normal component of the magnetic field strength is only small of first order. These surfaces are not magnetic surfaces and the topology of the magnetic field is unstable if a limited number of cycles exists. If, however, the number of rotations is changed rapidly enough, the existence of magnetic surfaces and the stability of the topology can be ensured even if the number of rotations is rational. With respect to heat insulating properties of a magnetic field, the absence of magnetic surfaces near the boundary of magnetic traps is immaterial under certain conditions, since in practice the magnetic field has only to prevent the loss of particles due to a movement along the lines of force from exceeding the loss due to diffusion.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR, Leningrad (Physicotechnical Institute imeni A. F. Ioffe AS USSR, Leningrad)

SUBMITTED: April 13, 1962

ACCESSION NR: AP4040321 S/0057/64/034/006/1126/1130

AUTHOR: Skornyakov, G.V.

TITLE: On the confinement of charged particles in magnetic mirror systems

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.6, 1964, 1126-1130

TOPIC TAGS: plasma, plasma confinement, magnetic mirror, charged particle, magnetic field

ABSTRACT: The author discussed the confinement of charged particles in a magnetic mirror system in which the magnetic field strength increases toward the periphery.. Particular attention is given to the topological properties of the magnetic field. The discussion is general: no calculations are performed. The most favorable case for confinement of the particles occurs when there is a layer of magnetic surfaces adjacent to the boundary of the system. If the magnetic field is large, so that the drift approximation is valid, the condition that a particle with appropriate value of the adiabatic invariant cannot escape is the same as the condition previously found that the topology of the magnetic fielddbe stable (G.V.Skornyakov,ZhTF 32,261, 777,1494,1962; 33,1477,1478,1963). The fraction of particles confined depends on the

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ACCESSION NR: AP4040321

distribution of their adiabatic invariants. An ion formed in a region of strong magnetic field tends to have a small adiabatic invariant, and thus to escape. If such a particle passes through a region of low field strength, its invariant might be increased by collision with a gas atom; but such collisions will be rare because the ion density in the low field region will be small since the velocity there is large. If, however, there is a region in which the field is not sufficiently strong to maintain adiabativity, the adiabatic invariant of a particle will change on traversing this region even without a collision. The tendency is for the adiabatic invariant to assume a large value, and thus for the particle to be confined. It is concluded that if a system of the type discussed, with stable magnetic field topology, has a large inner region of very low magnetic field strength, a large group of confined particles will be formed regardless of how the plasma is introduced into the system. Orig.art.has: 4 formulas.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A.F.Ioffe AN SSSR,Leningrad (Physico-technical Institute, AN SSSR)

SUBMITTED: 02Nov63 DATE ACQ: 18Jun64 ENCL: 00

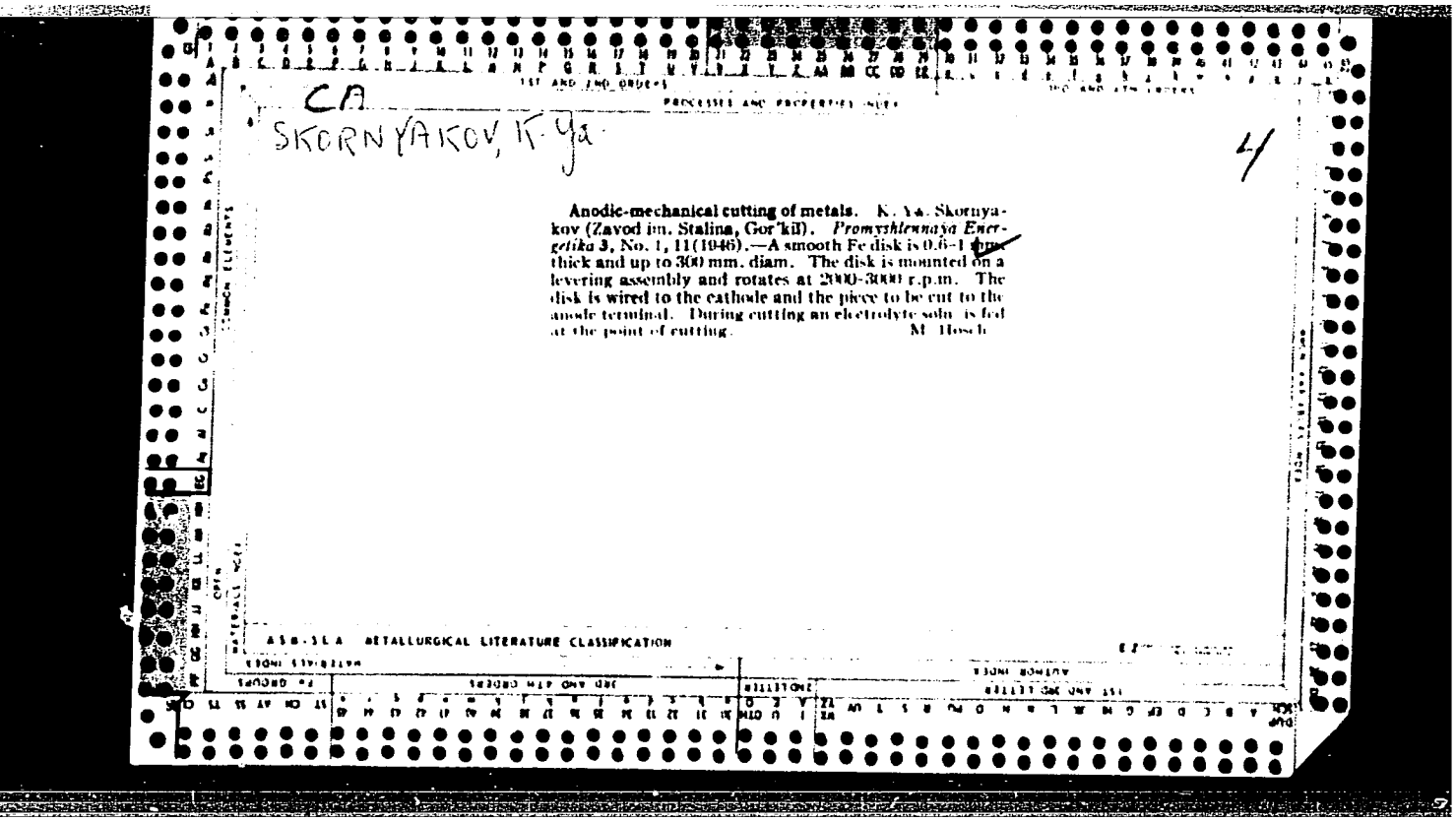
SUB CODE: ME NR REF SOV: 009 OTHER: 001

Card 2/2

SKORNYAKOV, I., zaestyanshchik.

Flangeless joining of air ducts. Stroitel' no.2:11 F '58.
(MIRA 11:2)

(Pipe fittings)



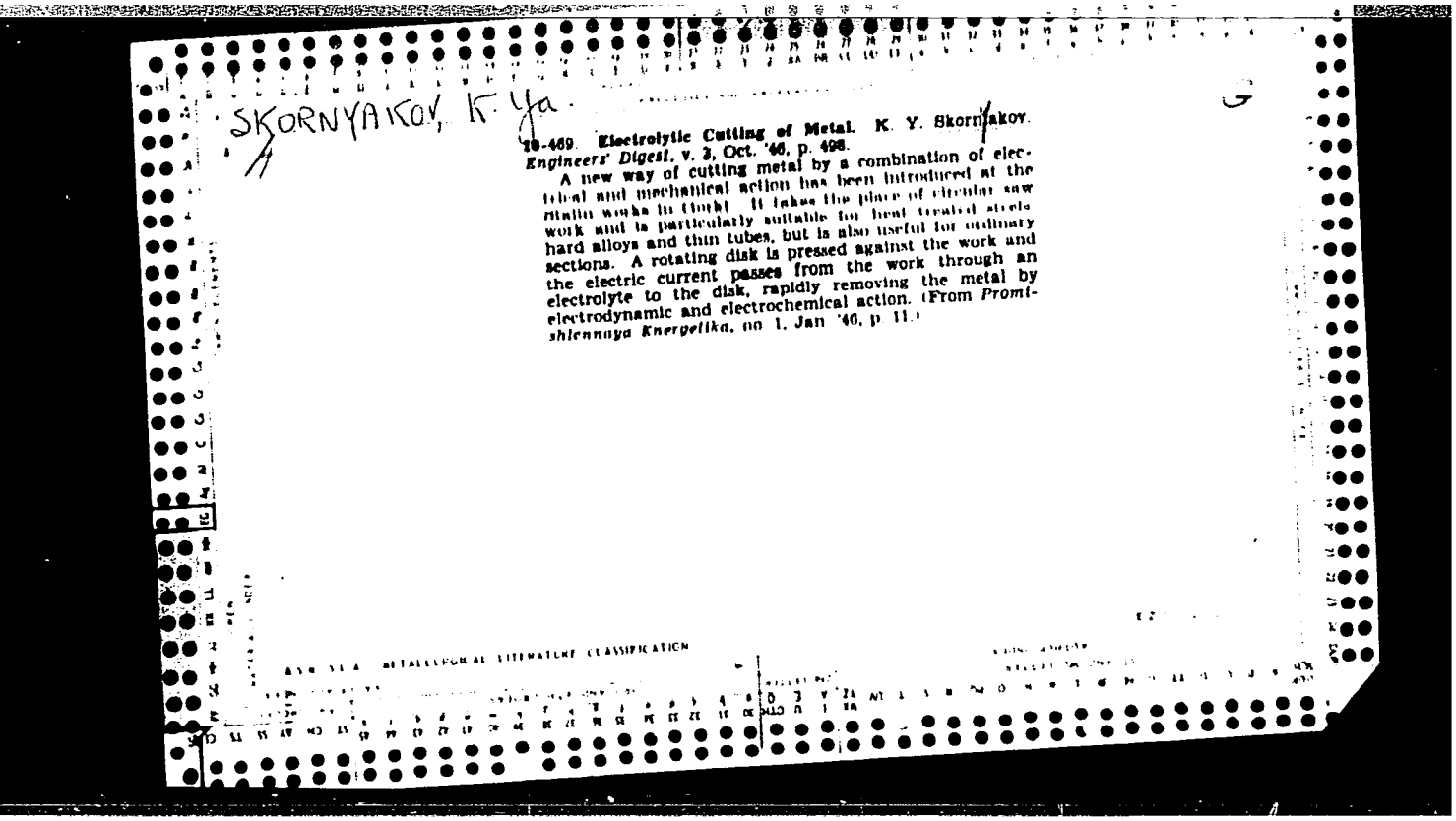
CA

SKORNYAKOV, K. Ya.

4/

Anodic-mechanical cutting of metals. K. Ya. Skornyakov (Zavod im. Stalina, Gor'kii). *Promyshlennaya Energetika* 3, No. 1, 11(1946).—A smooth Fe disk is 0.6–1 mm. thick and up to 300 mm. diam. The disk is mounted on a levering assembly and rotates at 2000–3000 r.p.m. The disk is wired to the cathode and the piece to be cut to the anode terminal. During cutting an electrolyte soln. is fed at the point of cutting. M. Hosch

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



SKORNYAKOV, K. Ya.

39-469. **Electrolytic Cutting of Metal.** K. Y. Skornyakov. *Engineers' Digest*, v. 3, Oct. '46, p. 498.

A new way of cutting metal by a combination of electrical and mechanical action has been introduced at the Stalin works in Gorki. It takes the place of circular saw work and is particularly suitable for heat treated steels, hard alloys and thin tubes, but is also useful for ordinary sections. A rotating disk is pressed against the work and the electric current passes from the work through an electrolyte to the disk, rapidly removing the metal by electrodynamic and electrochemical action. (From *Promishlennaya Energetika*, no 1, Jan '46, p 11.)

SKORNYAKOV, K. Ya.

Composition for masking surfaces in chrome plating. K. Ya. Skornyakov and I. A. Shcherbakov. U.S.S.R. 100,907, Sept. 25, 1955. The compn. contains montan wax 54, bitumen 41, and glass or asbestos fiber 5%. Areas thus masked are protected against the temp. and stresses of the Cr-plating baths.

M. Hosch

L 23892-66 EWT(m)/EWA(d)/T/EWP(t) IJP(c) JD/WW/JW/WB/DJ

ACC NR: AP6008626 (N) SOURCE CODE: UR/0365/65/001/006/0692/0697

42

B

AUTHOR: Skornyakov, K. Ya.

ORG: none

TITLE: Steam oxidation of steel 08KP 18 18

SOURCE: Zashchita metallov, v. 1, no. 6, 1965, 692-697

TOPIC TAGS: metal oxidation, protective coating, corrosion resistance, corrosion protection, oxide formation, steel, iron oxide / 08KP steel

ABSTRACT: A study of the oxidation of steel 08KP in an atmosphere of superheated steam is described. The work was undertaken to learn the optimal conditions for formation of Fe_3O_4 films as a corrosion-resistant coating. The diagram of the laboratory setup is shown, and the experimental procedure is described in detail. The optimal conditions are: temperature of 500—550C, steam pressure of 0.2—0.4 atm, oxidation period of 60—90 min. The corrosion stability of steel 08KP thus protected was investigated in sea water, fresh and distilled water, mineral oils, liquid fuel, and in superheated and saturated steam. It was established that the protective value of the oxide coating in combination with film impregnation or paint is greater than that of metallic coverings. This method is suggested as a means of corrosion protection of steel brackets, parts operating in mineral oil, liquid fuel, and steam, and as a base for lake coatings. Orig. art. has: 2 tables and 3 figures.

SUB CODE: 07, 11/ SUBM DATE: 28Feb65/ ORIG REF: 008 UDC: 620.197.2

Card 1/1 dda

SKORNYAKOV, L. A. (Moskva)

A special class of automata; nerve systems. Prob. kib. no.4:23-36 '60. (MIRA 13:8)
(Cybernetics)

SKORNYAKOV, L.A.

Instrument for testing traction motor throttles. Elek. i tepl. tiaga 2 no.11:15 N '58. (MIRA 11:12)

1. Vedushchiy konstruktor proizvodstvennogo konstrukterskogo byuro TSentral'nogo upravleniya tyagi Ministerstva putey soobshcheniya. (Electric railway motors--Testing)

SKORNYAKOV, L.A., inzh.

Machine for disassembling auxiliary electric machinery. Elek.i tepl.tiage 3 no.6:9 Je '59. (MIRA 12:9)
(Electric machinery)

SKORNYAKOV, L.A.

New technology for the removal of small pinions. Elek.i tepl.tiaga 6 no.1:23-24 Ja '62. (MIRA 15:1)

1. Vedushchiy konstruktor proyektno-konstruktorskogo byuro Glavnogo upravleniya lokomotivnogo khozyaystva Ministerstva putey soobshcheniya.
(Electric railway motors--Maintenance and repair)

SKORNYAKOV, L. A.

408

Skornyakov, L. A. Natural domains of Veblen-Wedderburn projective planes. Izvestiya Akad. Nauk SSSR. Ser. Mat. 13, 447–472 (1949). (Russian)

The author introduces a generalization of the natural ring of a projective plane defined by the reviewer [Trans. Amer. Math. Soc. 54, 229–277 (1943); these Rev. 5, 72]. This generalized ring bears the same relation to that of the reviewer as a quasigroup does to a loop. A study is made of the Veblen-Wedderburn planes and the isotopy of coordinate rings. Particular attention is given to one-sided alternative rings and the relation of the minor Desargues theorem (theorem L) to the existence of collineations. *M. Hall.*

Source: Mathematical Reviews, Vol 11 No. 3

SKORNYAKOV, L. A.

Skornyakov, L. A. Alternative fields. Ukrain. Mat. Zurnal 2, 70–85 (1950). (Russian)

It is shown that an alternative field K of characteristic different from 2 or 3 is associative or is a Cayley-Dickson algebra over its center. This important result has been obtained independently by R. H. Bruck and Ervin Kleinfeld and presented at the International Congress of Mathematicians in September, 1950. The proof by Bruck and Kleinfeld also covers the case of characteristic 3. The two proofs are quite different. Bruck and Kleinfeld base their proof on showing that in a nonassociative alternative field every element satisfies a quadratic equation over the center. Skornyakov proceeds by showing the properties and existence of a "special triple." Elements a, b, c form a special triple if

$$ba = -ab, \quad ca = -ac, \quad cb = -bc, \quad a(bc) = -(ab)c.$$

Because of the importance of this result, Skornyakov's proof will be sketched in some detail.

The associator $[a, b, c]$ and commutator $[a, b]$ are given by the rules: $[a, b, c] = (ab)c - a(bc)$, $[a, b] = ab - ba$. The basic identities defining an alternative ring are $(ab)b = a(bb)$, $(aa)b = a(ab)$. From these follow directly the alternating properties of the associator: $[a, b, c] = -[a, c, b] = -[b, a, c]$. In addition the following relations hold, assuming the characteristic different from 2:

(1) $(ab)a = a(ba)$,

(2) $a^{-1}(ab) = b = (ba)a^{-1}$,

(3) $(ab)(ca) = a((bc)a)$,

(4) $6[a, b, c] = [[a, b], c] + [[b, c], a] + [[c, a], b]$,

(5) $[ab, c, d] - [a, bc, d] + [a, b, cd] = a[b, c, d] + [a, b, c]b$,

(6) $[ab, a, c] + [ba, a, c] - [b, a^2, c] = 0$,

(7) $[ab, a, c] + [a, b, ac] = 0$,

(8) $[ba, a, c] = -a[a, b, c]$,

(9) $[ab, a, c] = -[a, b, c]b$.

An element α such that $[\alpha, b, c] = 0$ for every b and c is said to be in the associative center A of K. By specialization in (5) we find $[\alpha a, b, c] = a[a, b, c]$, $[a, b, c]\alpha$, and

Source: Mathematical Reviews, Vol. 12 No. 7

SKORNYAKOV, L. A.

PA 196T76

USSR/Mathematics - Projective Planes Nov/Dec 51

"Projective Planes," L. A. Skornyakov

"Uspekh Matemat Nauk" Vol VI, No 6(46), pp 112-154

Projective space is the name given to a set of points and lines between which is established a relation of incidence subject to certain requirements. Skornyakov gives a systematic exposition of the completed part of subject theory, and formulates without proof the results of this theory; also indicates problems

196T76

USSR/Mathematics - Projective Planes (Contd) Nov/Dec 51

whose solns are greatly desired for the sake of the further development of the theory of projective planes. Author acknowledges assistance of B. I. Argunov, L. I. Golovina, N. V. Yefimov, A. G. Kurosh, P. K. Rashevskiy, and V. S. Skornyakova. He thanks B. I. Tsukerman for his results before their publication.

196T76

SKORNYAKOV, L. A.

Skornyakov, L. A. Right-alternative fields. Izvestiya Akad. Nauk SSSR. Ser. Mat. 15, 177–184 (1951). (Russian)

A ring R is right alternative if the law $(ab)b=a(bb)$ holds. It is a field if it has no divisors of zero and equations $xa=b$, $ax=b$ have solutions. It is shown that a right alternative field of characteristic not 2 is an alternative field. This result is applied to projective planes. If the minor theorem of Desargues is valid for all choices involving one of two given lines as the axis of perspectivity, then it is a universal theorem. *Marshall Hall* (Washington, D. C.).

Source: Mathematical Reviews, Vol 12 No. 7

SRW

Skornyakov, L. A.

Skornyakov, L. A. The configuration D_9. Mat. Sbornik N.S. 30(72), 73–78 (1952). (Russian)

Theorem D_9 is the special case of the Theorem of Desargues in which two vertices of one of the given triangles lie on sides of the other. The little Theorem of Desargues (Theorem D_{10}) is the special case of the Theorem of Desargues in which the center of perspectivity lies on the axis of perspectivity. It was shown by Moufang [Math. Ann. 106, 755–795 (1932)] that D_9 implies D_{10} if the diagonal points of a quadrilateral are not collinear. D_{10} is equivalent to coordinatization from an alternative field. In an effort to free this result from the assumption on quadrilaterals, the author derives a number of theorems which are always consequences of D_9 and shows that several of these are equivalent to D_9. *Marshall Hall* (Washington, D. C.).

Source: Mathematical Reviews, Vol 13 No. 8

SKORNVAKOV, L.A.

Mathematical Review
June 1954
Geometry

10-7-54
LL

(1)

Skornyakov, L. A. Projective planes. Amer. Math. Soc. Translation no. 99, 58 pp. (1953).
Translated from Uspehi Matem. Nauk (N.S.) 6, no. 6(46), 112–154 (1951); these Rev. 13, 767.

ŠKORNYAKOV, L. A.

Skornyakov, L. A. Topological projective planes. Trudy Moskov. Mat. Obšč. 3, 347–373 (1954). (Russian)

A topological projective plane P is defined as follows: both the space of points and the space of lines are endowed with a Hausdorff topology, and both operations of incidence are assumed to be (jointly) continuous. Even if one assumes compactness and connectedness there are a great variety of possible non-Desarguian planes, and so the project of classifying all topological projective planes is not undertaken. However, there are many interesting partial results. For instance: the space of points of P is either connected or totally disconnected; it is either discrete or dense in itself; if it is locally compact it is compact.

The author also studies topological partial planes, notably Euclidean planes where a line is deleted (these are more often called affine planes), co-Euclidean planes where a point is deleted, and dual Euclidean planes where both are deleted. Dual Euclidean planes are the natural object in

SKORNYAKOV, L. A. 2/2

which to introduce Marshall Hall's ternary operation. If suitable additional continuity assumptions on the plane are made, it turns out that the ternary operation is continuous in all desirable senses. Conversely, a topological ternary operation defines a topological dual Euclidean plane. The question as to whether such a plane can be embedded in a topological projective plane is left open in general, but is answered in the affirmative in the locally compact connected case. *I. Kaplansky* (Chicago, Ill.).

SKORNYAKOV, L. A.

USSR/Mathematics - Division Algebra

Card 1/1

Author : Skornyakov, L A.

Title : Concerning the note "Theory of alternative bodies"

Periodical : Usp. mat. nauk, 9, No 2(60), 185-188, 1954

Abstract : Continuation of the author's earlier articles entitles "Theory of alternative bodies" in the same journal, 5, No 5, 150-162, 1950, and in Ukr matem zhurnal [Ukrainian mathematical journal], No 1, 70-85, 1950. Gives an algebra of rank (order) 15 over the field of characteristic 3 with a base in a, b, c, d, T.

Submitted : September 1, 1953

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001651110011-4"

SKORNJAKOV, L.A.

SUBJECT USSR/MATHEMATICS/Geometry CARD 1/1 PG - 78
AUTHOR SKORNJAKOV L.A.
TITLE Metrization of the projective plane with given system of curves.
PERIODICAL Izvestija Akad. Nauk. 19, 471-482 (1955)
reviewed 6/1956

Let Σ be a system of subsets of the projective plane Π, which is denoted as curves. Every curve of Σ be homeomorphic to the circle. By natural definition of the incidence, points of Π and curves of Σ form an abstract projective plane. The author proves that then on Π one can introduce a metric $d(A,B)$ which has the following properties: 1) the metric d induces in Π a natural topology; 2) if $A,B \in \Pi$, then $d(A,B) \leq 1$; 3) if $d(A,B)+d(B,C) = d(A,C)$, then the points A,B,C lie on a curve of Σ; 4) if A and C are different points of Π, then there exists a point $B \in \Pi$ such that $d(A,B) + d(B,C) = d(A,C)$; 5) if $A,B \in \Pi$, $d(A,B) < 1$, ε - arbitrary, then there exists a δ $0 < \delta < \varepsilon$ to which belongs only one point B_δ such that

$$d(A,B) + d(B,B_\delta) = d(A,B_\delta) \quad \text{and} \quad d(B,B_\delta) = \delta .$$

Skornyakov, L. A.

Call Nr: AF 1108825

Transactions of the Third All-union Mathematical Congress (Cont.) Moscow, Jun-Jul '56, Trudy '56, V. 1, Sect. Rpts., Izdatel'stvo AN SSSR, Moscow, 1956, 237 pp.

Card 11/80

ARGUNOV, Boris Ivanovich; SKORNYAKOV, Lev Anatol'yevich; LAPKO, A.F., red.; AKHLAMOV, S.N., tekhn.red.

[Configuration theorems] Konfiguratsionnye teoremy. Moskva, Gos. izd-vo tekhniko-teoret. lit-ry, 1957. 37 p. (Populiarnye lektsii po matematike, no.24). (MIRA 11:2)
(Configurations)

SKORNYAKOV, L. A.

5

2

Skornyakov, L. A. Systems of curves on a surface. Trudy Moskov. Mat. Obšč. 6 (1957), 135–164. (Russian) 1-F\W

Contains a detailed and non-trivial proof (with argument of the R. L. Moore type) for the theorem announced without proof in Dokl. Akad. Nauk SSSR (N.S.) 98 (1954), 25–26 [MR 16, 388]. *H. Busemann.*

1/1

SKORNYAKOV, L. A.

AUTHOR: KUROSH,A.G., SKORNYAKOV,L.A. 42-5-16/17

TITLE: Scientific Research Seminar at the Chair of Algebra at the Moscow University (Nauchno-issledovatel'skiy seminar kafedry algebry Moskovskogo universiteta)

PERIODICAL: Uspekhi Mat.Nauk, 1957, Vol.12, Nr.5, pp. 261-269 (USSR)

ABSTRACT: After a short retrospect to the algebraic research in Russia until 1930 the author describes the rise and the single states of work of the algebraic seminary at the Moscow University. The seminary has been founded in 1930 by O.Schmidt and st first it took place in the house of Schmidt. The first investigations of the members of the seminary (Chunikhin, Kurosh, Turkin etc.) joined the papers of O.Schmidt on special groups. Since 1938 the seminary took place at the university and it became the center of the algebraic research in Soviet Russia. From 1942 to 1943 the seminary was removed to Ashkhabad. After the war Kurosh was the leader of the seminary. The most active permanent participators of the seminary after the war are Andrunakievich,V.A., Gol'berg P.A., Mishina A.P., Postnikov,M.M., Sadovskiy L.E., Skornyakov L.A., Shirshov A.I and Shul'geyfer E.G.. Because of the intensive connections with all towns of the Soviet Union the seminary is very important. In the moment

Card 1/2

Scientific Research Seminar at the Chair of Algebra at the Moscow University 42-5-16/17

the leading subject is the theory of rings and algebras, but also investigations for all domains of the modern algebra are carried out. The sessions take place every week.

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1. Algebra-USSR 2. Algebra-Theory 3. Rings-Theory

Card 2/2

AUTHOR: SKORNYAKOV L.A.(Moscow) 39-4-1/9

TITLE: T-Homomorphisms of Rings (T-gomomorfizmy kolets)

PERIODICAL: Mat.Sbornik, 1957, Vol.42, Nr.4, pp.425-440 (USSR)

ABSTRACT: For rings which need not to be associative, the author introduces the notion of the T-homomorphism which generalizes the usual notion of the homomorphism. The T-homomorphism of the ring R with the operator domain Λ is the unique mapping θ of R into the ring S with the same operator domain Λ if θ is formally completed by the symbol ∞ (the ring operations do not relate to ∞), if $\theta(R) \neq \infty$ and if there appear the following properties:

1. from $a,b \in R$, $\lambda \in \Lambda$, $\theta(a),\theta(b) \neq \infty$ there follows: $\theta(a-b) = \theta(a)-\theta(b)$, $\theta(ab) = \theta(a)\cdot\theta(b)$, $\theta(\lambda a) = \theta(a)$;
2. from $c = ab$, $\theta(c) \neq \infty$, $\theta(a) = \infty$ there follows $\theta(b) = 0$;
3. from $c = ab$, $\theta(c) \neq \infty$, $\theta(b) = \infty$ there follows $\theta(a) = 0$.

The definition is suitable for the consideration of nonassociative rings in which the equations $ax = b$ and $xa = b$, $a \neq 0$ have at least one solution. Here free rings of this kind can be defined with the aid of the T-homomorphism such that the properties usual for free rings remain true.-2 Soviet and 2 foreign references.

Card 1/1

AVAILABLE: Library of Congress.

SKORNYAKOV, L.A.

39-3-1/8

AUTHOR: SKORNYAKOV, L.A. (Moscow)

TITLE: Homomorphisms of Projective Planes and T-Homomorphisms of Ternaries (Gomomorfizmy proyektivnykh ploskostey i T-gomomorfizmy ternarov)

PERIODICAL: Matematicheskiy Sbornik, 1957, Vol.43, Nr 3, pp.285-294 (USSR)

ABSTRACT: A set $\mathfrak{M}$ containing the symbols 0 and 1 is denoted as a ternary, if a ternary operation $a \cdot m \circ b$ with the following properties is defined in it: 1.) $0 \cdot m \circ c = a \cdot 0 \circ c = c$ 2.) $1 \cdot m \circ 0 = m \cdot 1 \circ 0 = m$ 3.) The equation $a \cdot m \circ z = c$ is uniquely solvable with respect to z 4.) $x \cdot m_1 \circ b_1 = x \cdot m_2 \circ b_2$, $m_1 \neq m_2$, is uniquely solvable with respect to x. 5.) The system $a_1 \cdot m \circ b = c_1$, $a_2 \cdot m \circ b = c_2$, $a_1 \neq a_2$ uniquely defines the pair m,b .
A unique mapping θ of the ternary $\mathfrak{M}$ on the ternary $\mathfrak{M}'$ is denoted to be a T-homomorphism, if 1. for a^θ, m^θ, $b^\theta \neq \infty$ always $(a.m \circ b)^\theta = a^\theta . m^\theta \circ b^\theta$ 2. from $a^\theta = \infty$, $b^\theta \neq \infty$, $(a.m \circ b)^\theta \neq \infty$ it follows: $m^\theta = 0$ 3. from $m^\theta = \infty$, $b^\theta \neq \infty$, $(a-m \circ b)^\theta \neq \infty$ it follows $a^\theta = 0$ 4. from $b^\theta = \infty$, $(a.m \circ b)^\theta \neq \infty$ it follows either $a^\theta = \infty$ or $m^\theta = \infty$ 5. from $m^\theta = b^\theta = \infty$,

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Homomorphisms of Projective Planes and T-Homomorphisms of Ternaries 39-3-1/8

$c = a.m \circ b$, $c^{\theta} \neq \infty$, $0 = d.m \circ b$ it follows $a^{\theta} = d^{\theta}$ 6. from $c = a.m \circ b = a.n \circ 0$, $a^{\theta} = c^{\theta} = \infty$, $b^{\theta} \neq \infty$ it follows $m^{\theta} = n^{\theta}$ 7. from $a^{\theta} = m^{\theta} = b^{\theta} = c^{\theta} = \infty$, where $c = a.n \circ 0 = a.m \circ b$, $0 = d.m \circ b$, it follows: either $n^{\theta} = \infty$ or $d^{\theta} = \infty$.

Under application of these and a series of further notions introduced by the author in his former papers [Ref.1,2] he proves 5 theorems. Theorem 1 presents the most general statement: Theorem: Let $\Pi(\mathfrak{M})$ denote the projective plane constructed over the ternary $\mathfrak{M}$. Let θ be a T-homomorphism of the ternary $\mathfrak{M}$ on the ternary $\mathfrak{M}'$. Then there exists a homomorphism φ of the projective plane $\pi = \Pi(\mathfrak{M})$ on the projective plane $\pi' = \Pi(\mathfrak{M}')$. 5 figures and 2 Soviet references are quoted.

SUBMITTED: 6 April 1956
AVAILABLE: Library of Congress

1. Projective-Geometry 2. Conformal mapping 3. Mathematics-Theory

Card 2/2

SKORNYAKOV, Lev Anatol'yevich -- awarded sci degree of Doc Physico-Math Sci for the 10 Feb 58 defense of dissertation: "Certain questions of the theory of solids and the theory of projected planes" at the Council, Mos State Univ imeni Lomonosov; Prot No 14, 31 May 58.

(BMVO, 11-58,20)

AUTHOR: Skornyakov, L.A. (Moscow) SOV/42-13-3-21/41

TITLE: Nerve Systems (Nervnyye sistemy)

PERIODICAL: Uspekhi matematicheskikh nauk, 1958, Vol 13, Nr 3, pp 233-234 (USSR)

ABSTRACT: The set S is called a labyrinth if between its elements the relation $x \triangleright y$ ("x covers y") is defined. The union of all elements which do not cover an other element (are not covered by an other element) is called entering (exit). The other elements are called inner elements. The set of elements being covered by the element s of S is called s-base and is denoted by $\pi(s)$. Increasing or decreasing chains are defined by $x_1 \triangleleft \ldots \triangleleft x_n \triangleleft \ldots$ or $x_1 \triangleright \ldots \triangleright x_n \triangleright \ldots$. There exists a loop if $x_1 \triangleleft x_2 \triangleleft \ldots \triangleleft x_n \triangleleft x_1$. Let a labyrinth S be given without infinitely descending chains and a set A with the zero element 0. To every $s \in S$ there corresponds a k-digit operation f_s over A, where k is the number of elements of $\pi(s)$. The arguments of f_s have to correspond biuniquely to the elements of $\pi(s)$ and 0 has to be an idempotent of this operation. The union of S,A and the system F of the operations f_s is called a nerve system (S,A,F). If A consists of two elements, if all f_s

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are finite-digit and are defined according to special rules, then one obtains the nerve net due to Kleene [Ref 2]. For nerve systems introduced in this manner the author describes the notions of the isomorphy and equivalence and gives some theorems, e.g. sufficient conditions for the isomorphy of two equivalent verve systems, conditions for the existence of a certain canonic form etc. The results of Kleene on the representation of events can be transferred to nerve systems without loops.
There are 2 American references.

AUTHOR: Skornyakov, L.A. (Moscow) 39-44-3-1/3

TITLE: Nonassociative Free T-Sums of Bodies (Neassotsiativnyye svobodnyye T-summy tel)

PERIODICAL: Matematicheskiy Sbornik, 1958, Vol 44, Nr 3, pp 297-312 (USSR)

ABSTRACT: In a former paper the author [Ref 5] considered rings in which each of the equations $ax = b$ and $ya = b$, $a \neq 0$ possesses a unique solution. These rings were denoted as "bodies". There the notion of a free T-extension was defined. In the present paper a theory of nonassociative free T-sums of bodies is developed.

Theorem: Let A be an algebra without zero divisors over the body P, let B be a closed subalgebra of A. The subbody $\mathfrak{L}$ which is generated by the algebra B in the nonassociative free T-extension $\mathfrak{A}$ of algebra A and which is an algebra over P, is isomorphic to the nonassociative free T-extension of the algebra B. Here it is $\mathfrak{L} \cap A = B$.

Definition: As the nonassociative free T-sum of the bodies A_α the author denotes the nonassociative free T-extension $\mathfrak{A}$ of the nonassociative free sum of these bodies, in signs:

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$\mathfrak{A} = \sum^{T} A_{\alpha}$ or for a finite number of A_α's: $\mathfrak{A} = A_1 \overset{*}{T} \dots \overset{*}{T} A_n$.
For nonassociative free sums the signs $\sum^{*}$ and $\overset{*}{T}$ are applied.
Properties of nonassociative free T-sums:
1. The body $\mathfrak{A}$ is a nonassociative free T-sum of the bodies A_α if and only if a) $\bigcup A_\alpha \subset \mathfrak{A}$ b) No proper subbody of $\mathfrak{A}$ contains the set $\bigcup A_\alpha$ c) Let θ_α be T-homomorphisms of the bodies A_α into the body K. Then there exists a T- homomorphism θ of $\mathfrak{A}$ in K, so that $\theta(x) = \theta_\alpha(x)$ for all $x \in A_\alpha$.
2. If A_α-algebras are without zero divisors and $\mathfrak{A}$ is a nonassociative free T-extension of the algebra $A = \sum^{*} A_\alpha$, then it is $\mathfrak{A} = \sum^{T} \mathfrak{A}_\alpha$, where $\mathfrak{A}_\alpha$ is a nonassociative free T-extension of the algebra A_α.
3. If $\mathfrak{A} = \sum^{T} A_\alpha$ and $A_\alpha = \sum_{\beta}^{T} A_{\alpha\beta}$, then it is $\mathfrak{A} = \sum_{\alpha,\beta}^{T} A_{\alpha\beta}$.
Besides of these three properties the author presents four

other ones.

Theorem: Let $\mathfrak{A}$ be a nonassociative free T-sum of the bodies $\mathfrak{A}_\alpha$ and of a certain nonassociative free body F. Each subbody Ψ_γ of $\mathfrak{A}$ is a nonassociative free T-sum of the $\mathfrak{B}_\alpha = \mathfrak{A}_\alpha \cap \Psi_\gamma$ and perhaps of a further nonassociative free body.

Theorem: A subbody of a nonassociative free body is itself a nonassociative free body.

Three further theorems deal with T-sums with finitely many generators. Finally the author considers invariant properties.

Theorem: In order that two nonassociative free bodies $\mathfrak{A}$ and $\mathfrak{B}$ be isomorphic, it is necessary and sufficient that they possess equipotent systems of free generators. There are 6 references, 5 of which are Soviet, and 1 French.

SUBMITTED: May 23, 1956

AVAILABLE: Library of Congress

1. Rings - Mathematical analysis

S KORNYAKOV, L. A.

PHASE I BOOK EXPLOITATION SOV/4279

Problemy kibernetiki, vyp. v (Problems of Cybernetics, no. 4) Moscow, Fizmatgiz, 1960. 257 p. 10,000 copies printed.

Compilers: G.V. Vakulovskaya, T.L. Gavrilova, B.Yu. Pil'chak, Ya.I. Starobogatov, V.S. Shtarkman, and S.V. Yablonskiy; Eds.: G.V. Vakulovskaya, Ya.I. Starobogatov, and B.I. Finikov; Tech. Ed.: S.N. Akhlamov; Chief Ed.: A.A. Lyapunov.

PURPOSE: This book is intended for mathematicians and scientists interested in the problems of cybernetics and systems control.

COVERAGE: The book is a collection of articles on cybernetics, the theory of control systems, information theory, programming, computers, control processes in living organisms, and mathematical linguistics. The author thanks the following persons for their assistance: F. Ya. Vetukhnovskiy, A.P. Yershov, V.M. Zolotarev, V.K. Korobkov, V.I. Levenshteyn, O.B. Lupanov, B.A. Sevast'yanov, and M.L. Tsetlin. References accompany several of the articles.

Card 1/5

Problems of Cybernetics, no. 4 SOV/4279

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VI. CONTROL PROCESSES IN LIVING ORGANISMS

VII. PROBLEMS OF MATHEMATICAL LINGUISTICS

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Problems of Cybernetics, no. 4 SOV/4279

Kulagina, O.S. On Machine Translation From French Into Russian.
II. Algorithm for Translation From French Into Russian 207

AVAILABLE: Library of Congress

Card 5/5

AC/pw/mas
10-3-60

SKORNYAKOV, L.A.

Modules with an autodual structure of submodules. Sib. mat. zhur. 1 no.2:238-241 Jl-Ag '60. (MIRA 13:12)
(Algebra, Linear)

ROZENFEL'D, B.A., SKORNYAKOV, L.A.

Colloguium on algebraical and topological foundations of geometry held at Utrecht. Usp. mat. nauk 15 no.2:237-244 Mr-Ap '60.
(MIRA 13:9)

(Geometry)

88329

S/038/60/024/004/005/010XX
C 111/ C 333

16.5400

AUTHOR: Skornyakov, L. A.

TITLE: Projective Mappings of Modules

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya matematicheskaya, 1960, Vol. 24, No. 4, pp. 511-520

TEXT: A module is defined to be a left unitary module over an associative ring with unit. The element a of the F-module A is called free, if $\lambda a = 0$ is possible only for $\lambda = 0$. The F-module is called admissible, if

M 1. For arbitrary $x, y, z \in A$ there exists a free element $w \in A$ such that $(Fx + Fy + Fz) \cap Fw = 0$.

M 2. If $t \in A$, x, y, u are free elements from A and $Fx \cap Fy$, $Fu \cap Ft \neq 0$, then there exists a free element w such that

$$Fw \cap Fx = Fw \cap Fy = Fw \cap Fu = Fw \cap Ft = 0.$$

Let L(A) denote the structure of the submodules of the module A, which contains all submodules admitting a finite system of generators. The isomorphic mapping $S \rightarrow S^*$ of a structure L(A) on

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Projective Mappings of Modules

a structure L(B) is called projective mapping of the F-module A on the G-module B, if

P 1. to every a $\in$ A there exists a b $\in$ B so that $(Fa)^* = Gb$.

P 2. to every b $\in$ B there exists an a $\in$ A so that $(Fa)^* = Gb$.

P 3. there exists a free element u $\in$ A such that $(Fu)^* = Gu'$, where u' is free.

A pair of isomophic mappings $\alpha \to \alpha^\sigma$ of the ring F on the ring G and a $\to a^\sigma$ of the group A on the group B is denoted as semi-linear transformation of the F-module A on the G-module B, if $(\alpha a)^\sigma = \alpha^\sigma a^\sigma$ for arbitrary $\alpha \in$ F, a $\in$ A. The semilinear transformation induces a projective mapping of A on B, where L(A) and L(B) consist of all submodules of the corresponding modules.

Theorem: Let F be an associative ring with unit 1 in which from $\alpha\beta = 1$ it follows that $\beta\alpha = 1$ holds for a certain $\gamma \in$ F. Every projective mapping S $\to$ S* of the admissible F-module A

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Projective Mappings of Modules

on a G-module B is then induced by a semilinear transformation.

The theorem generalizes the first fundamental law of projective geometry (see (Ref.1)) and the theorem on the structure isomorphisms of a belian groups (see (Ref.2)).

The proof essentially follows the scheme of (Ref.1).

There are 6 references: 3 Soviet and 3 American.

[Abstracter's note: (Ref.1) is the book of R. Baer: Linear Algebra and Projective Geometry].

PRESENTED: by A. J. Mal'tsev, Academician

SUBMITTED: May 7, 1959

Card 3/3

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S/020/60/131/04/11/073

16.1600

AUTHOR: Skornyakov, L.A.

TITLE: Structural Isomorphism of Moduli Over Regular Rings 16

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol.131, No.4, pp.756-757.

TEXT: Let F^n be a free unitary modulus with n generators over the regular ring F. Let $\mathcal{L}(F^n)$ be the Dedekind structure which is generated by the submoduli of F^n with finitely many generators (compare (Ref.3)).

Theorem 2: Let F and G be regular rings, $n \geqslant 3$; let the structure $\mathcal{L}(F^n)$ be complete and continuous. Then every isomorphism θ of the structure $\mathcal{L}(F^n)$ onto the structure $\mathcal{L}(G^n)$ is induced by a semilinear mapping σ of the modulus F^n onto the modulus G^n, i.e. $\theta(S) = \{\sigma(x); x \in S\}$ for every $S \in \mathcal{L}(F^n)$.

Theorem 3: Let F and G be regular rings; let $\mathcal{L}(F^n)$ be complete and continuous; Let θ be an isomorphism of $\mathcal{L}(F^n)$ onto $\mathcal{L}(G^m)$; $3 \leqslant n < m$. Then there exist rings H and K so that H_K (F_n denotes the ring of quadratic matrices of n-th order with elements of the ring F) is isomorphic to F, K_1 is isomorphic

Card 1/2

SKORNYAKOV, Lev Anatol'yevich; SHIROKOVA, S.A., red.; YERMAKOVA, Ye.A., tekhn. red.

[Dedekind structures with complements and regular rings] Dedekindovy struktury s dopolneniiami i reguliarnye kol'tsa. Moskva, Gos. izd-vo fiziko-matem. lit-ry, 1961. 194 p. (MIRA 14:11)
(Aggregates) (Rings (Algebra))

SKORNYAKOV, L.A.

Compact topological spaces. Dokl. AN SSSR 140 no.6:1263-1266 O '61. (MIRA 14:11)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova. Predstavleno akademikom A.I.Mal'tsevym.
(Topology)

SKORNYAKOV L. A.

"Locally bicompact biregular rings"

report submitted at the Intl Conf of Mathematics, Stockholm, Sweden, 15-22 Aug 62

SKORNYAKOV, L.A.

Space of converging sequences. Dokl. AN SSSR 143 no.3:536-538 Mr '62. (MIRA 15:3)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova. Predstavleno akademikom A.I.Mal'tsevym.
(Sequences (Mathematics)) (Topology)

SKORNYAKOV, L.A. (Moskva)

Locally bicompact biregular rings. Mat. sbor. 62 no.1:3-13 S '63.
(MIRA 16:10)

(Rings (Algebra)) (Topology)

SKORNYAKOV, L.A.

Rings with injective cyclic moduli. Dokl. AN SSSR 148 no.1:40-43 Ja '63. (MIRA 16:2)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova. Predstavleno akademikom A.I. Mal'tsevym.
(Rings (Algebra))

[illegible]

Colloquium on abelian Groups. Usp.mat.nauk 19 no. 2:225-232 M-Ap '64. (MIRA 17:6)

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SKORN [illegible]

[illegible] Ringe. Alg. i log. 4 no.3:5-30 '65. (MIRA 18:10)

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ACC NR: AP7001836 (N) SOURCE CODE: UR/0135/66/000/012/0006/0008

AUTHOR: Kiselev, S. N.; Khavanov, V. A. (Engineer); Skornyakov, L. M (Engineer); Grechishkin, V. I. (Engineer)

ORG: none

TITLE: Pattern of distribution of residual surface stresses in welded plates of avial alloy

SOURCE: Svarochnoye proizvodstvo, no. 12, 1966, 6-8

TOPIC TAGS: welding equipment, metal stress, internal stress, weld evaluation, strain gage / Sv-AK-5 welding rod

ABSTRACT: The increasing use of avial-alloy-type structural elements and weldments of considerable thickness in which residual welding stresses combine with the scale factor as well as with the mechanical, chemical and structural heterogeneity of welded joints and the changes in plasticity of the material owing to aging processes, makes increasingly imperative an investigation of these stresses. Accordingly these stresses were measured in plates 30-, 40-, 70-, 90-, 140-, 220- and 300-mm thick of an avial type alloy containing 0.8-0.85% Si and 0.6-0.7% Mg in hardened and artificially aged state, with the aid of strain gages having a base of 5 mm and a resistance of the order of 50 ohm. The strain gauges were attached at intervals

UDC: 621.791.011:669.715

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L 00996-66 EWT(d)/EPA(s)-2/EWT(m)/EWP(w)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EWP(z)/EWP(b)/EWA(c) IJP(c) EM/MJW/JD/HM

ACCESSION NR: AP5018699 UR/0125/65/000/007/0044/0047

621.791.856:669.715

AUTHOR: Kiselev, S. N. (Engineer) (Moscow); Khovanov, V. A. (Engineer) (Moscow); Skornyakov, L. M. (Engineer) (Moscow); Malyukov, V.A. (Engineer) (Moscow)

TITLE: Welding thick plates of SAB-1 aluminum alloy

SOURCE: Avtomaticheskaya svarka, no. 7, 1965, 44-47

TOPIC TAGS: aluminum alloy, aluminum alloy thick plate, thick plate welding, edge groove geometry, welding electrode, weld metal property, heat treatment effect

ABSTRACT: Experiments have been made to develop an improved technique for welding thick plates of SAB-1 aluminum alloy, an age-hardenable alloy of the Al-Mg-Si system with Si:Mg > 1. Plates, 40, 80, and 140 mm thick, of SAB-1 alloy containing 0.81% Si and 0.48% Mg were inert-gas arc welded with a consumable electrode of the SvAK-5 type, 2, 4, or 5 mm in diameter, using a mixture of 30—40% Ar and 60—70% He for arc shielding. The use of helium made it possible to increase the temperature of the molten metal pool, to raise the voltage, and to ensure good weld formation. The best groove geometry was a double-V without root opening. In the experiments, the welding current was 450—520 amp, the arc voltage was 29—32 v, the Ar consumption

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L 00996-66
ACCESSION NR: AP5018699

was 30—35 l/min, and the He consumption was 50—60 l/min. The welding speed varied from 11.5 to 18.2 m/hr, and the number of passes was 6, 12—14, and 26—28 for plates 40, 80, and 140 mm, respectively. Welding with 4-mm electrode wire produced the least porous weld metal. Prior to heat treatment, the hardness of the heat-affected zone in 40-mm plates decreased by 15—18 HB compared with the parent metal, with the maximum decrease taking place at a distance of 12—15 mm from the fusion line. The corresponding figures for 80-mm plates were 10—12 HB and 8—10 mm, and for 140-mm plates, 5—8 HB and 5—6 mm. Subsequent heat treatment leveled to some extent the mechanical properties of the metal in the heat-affected zone, but did not improve them in the weld metal. Development of special electrode wire for welding SAB-1 type alloys is recommended to obtain welded joints which, after heat treatment, would have the strength of the parent metal. Orig. art. has: 5 figures and 3 tables.
[MS]

ASSOCIATION: none

SUBMITTED: 29Aug64 ENCL: 00 SUB CODE: MM IE

NO REF SOV: 004 OTHER: 001 ATD PRESS: 4068

Card 2/2

L 27380-66 EWI(m)/EWA(d)/EWP(v)/T/EWP(t)/ETI/EWP(k) IJP(c) JD/HM/JH
ACC NR: AP6015242 (A) SOURCE CODE: UR/0125/66/000/005/0016/0019

AUTHOR: Kiselev, S. N. (Moscow); Khovanov, V. A. (Moscow); Malyukov, V. A. (Moscow); Skornyakov, L. M. (Moscow); Matyunina, A. T. (Moscow)

ORG: none

TITLE: Mechanical properties of heavy welded avial-type alloy specimens

SOURCE: Avtomaticheskaya svarka, no. 5, 1966, 16-19

TOPIC TAGS: aluminum alloy, alloy weld, weld property, avial alloy

ABSTRACT: The effect of the size factor on the mechanical properites of heat-treatable avial-type aluminum-base alloy (0.74—0.90% Si, 0.59—0.70% Mg) welds and base metal has been studied. Specimens 10x10x100, 30x30x450, 40x40x500, 60x60x600, and 120x120x1000 mm (respective size factors 1,3,4,6 and 12) were made from plates 40,70,90,220 and 330 mm thick. Welding was done with a consumable SvAK-5 electrode in an argon-helium atmosphere. The base metal in the heat-treated condition (annealing and aging) had a tensile strength of 20—25 kg/mm^2, a yield strength of 10—14 kg/mm^2, and an elongation of 20—25%; corresponding figures for welded specimens were 16—19 kg/mm^2, 8—10 kg/mm^2, and 10—12%. Fracture in most cases was in the weld. Bend tests (on specimens with the Charpy-type notch) showed that with increasing size factor, the bend angle (measured at the appearance of the first crack)

UDC: 621.791.053:620.172

Card 1/2

ACC NR: AP6015242

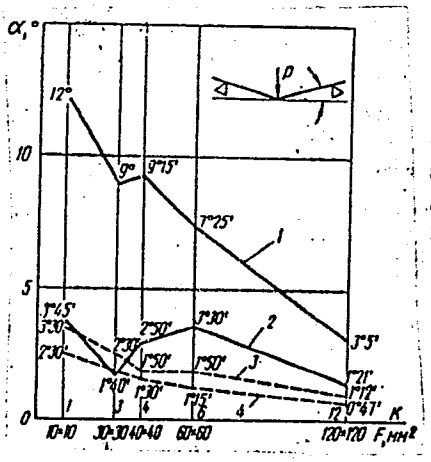


Fig. 1. Effect of the size factor on the bend angle of avial-type alloy base metal in the heat-treated condition (1) and aged at 130C for 200 hr (2); and in as-welded alloy welds (3) aged at 130C for 200 hr (4)

dropped. The values of bend angle in welded specimens were much lower than in base metal (see Fig. 1). Aging at 100 C for 1000 hr brings about a further drop in the ductility of welded specimens. After this treatment they failed in a brittle manner. Orig. art. has: 5 figures and 3 tables. [AZ]

SUB CODE: 11, 13/ SUBM DATE: 25May65/ ORIG REF: 005/ ATD PRESS: 4259

Card 2/2

SKORNYAKOV, L. R.

224 Ekspluatatsiya I Yemont Skvazhin Na Vodu. Kiev, Gostekhizdar Usr, 1954, 64 S. S Ill. 20 S_m. (V Pomoshch' Sel'skomu Stroitel'stvu I Mts). 2.000 EKZ. lr. 50K.--Na Ukr. Yaz.--(54-54814).

628.18 t 628.112.2

SO: Knizhnaya, Letopis, Voll 1, 1955

SKORNYAKOV, M.D.

Introducing new equipment in the installations of the Moscow sewerage system. Gor.khoz.Mosk.30 no.3:24-26 Mr '56. (MLRA 9:7)

1.Glavnyy inzhener tresta "Mosochistvod".
(Moscow--Sewerage)

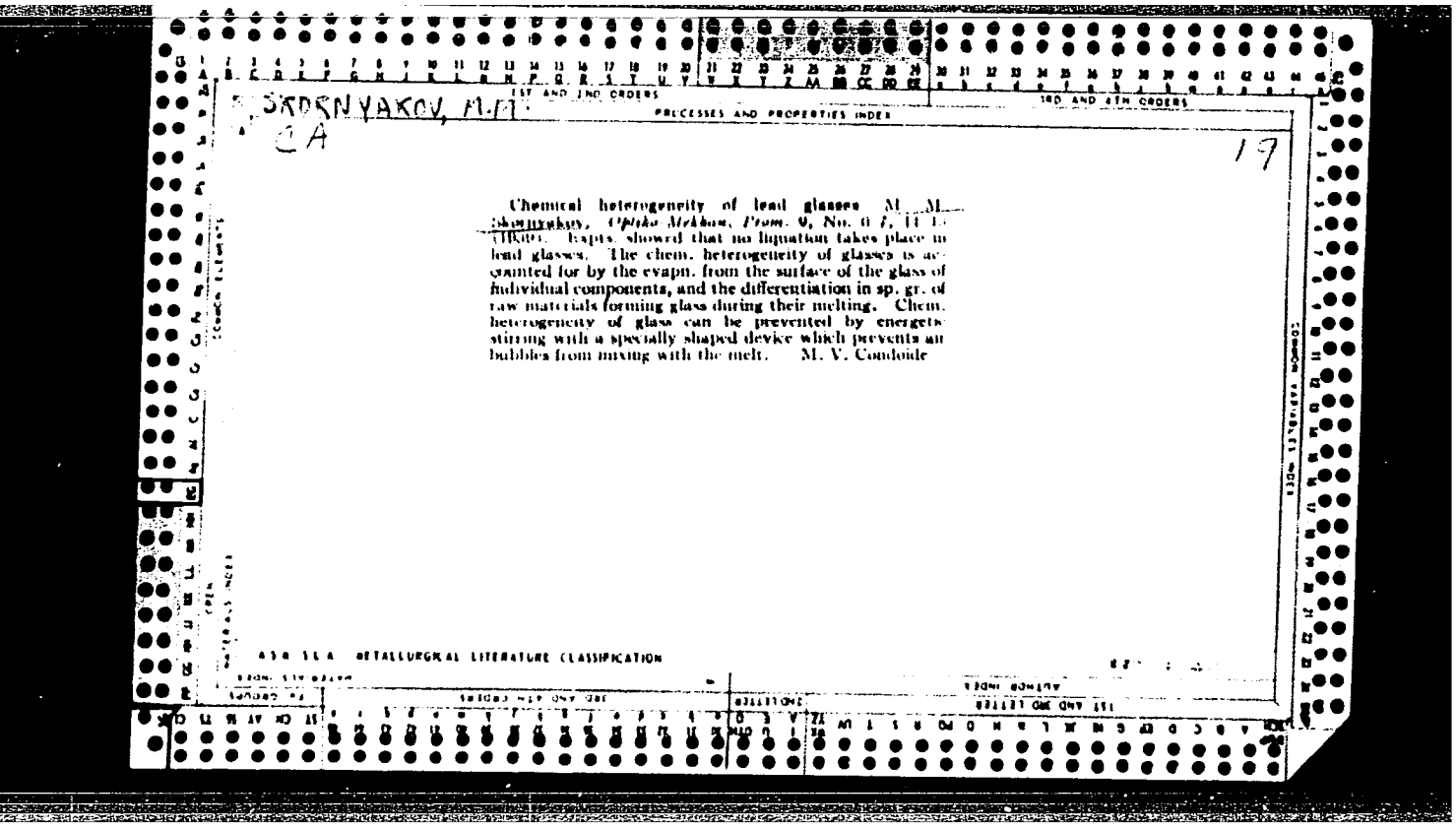
SKORNYAKOV, M.M.

CY

19

Stirring optical glass during melting. K. S. Evstrop'ev and M. M. Skornyakov. *Optiko-Mekhan. Prom.* 9, No. 2, 13-15(1030). The importance of stirring optical glass during melting to obtain greater homogeneity is discussed with special regard to: (1) the effect of the soly. of pot walls and inclusion in the glass of small bubbles with rapid stirring; (2) max. speed of stirring in large pots; (3) shape and material of the stirring equipment; (4) casting of optical glass. M. V. Condoide

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



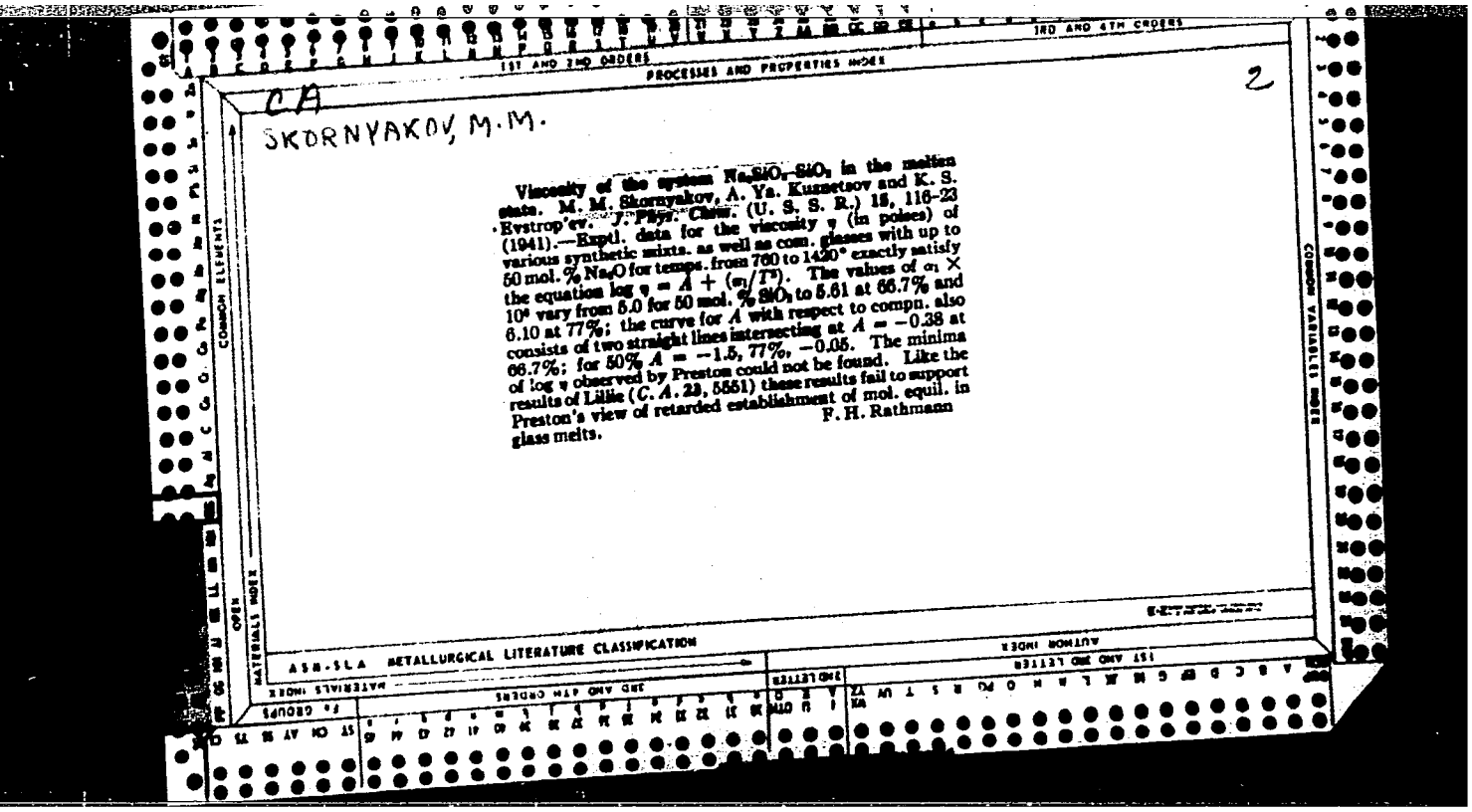
SADOVNYAKOV, M.M.

CA

19

Chemical heterogeneity of lead glasses. M. M. Sadovnyakov. *Optiko Mekhan. Prom.* 9, No. 6, 11-13 (1942). Expts. showed that no liquation takes place in lead glasses. The chem. heterogeneity of glasses is accounted for by the evapn. from the surface of the glass of individual components, and the differentiation in sp. gr. of raw materials forming glass during their melting. Chem. heterogeneity of glass can be prevented by energetic stirring with a specially shaped device which prevents air bubbles from mixing with the melt. M. V. Condoide

ASM TEA METALLURGICAL LITERATURE CLASSIFICATION



CA

SKORNYAKOV, M.M.

2

Viscosity of the system Na_2SiO_3–SiO_2 in the molten state. M. M. Skornyakov, A. Ya. Kuznetsov and K. S. Evstrop'ev. *J. Phys. Chem.* (U. S. S. R.) 15, 116–23 (1941).—Exptl. data for the viscosity η (in poises) of various synthetic mixts. as well as com. glasses with up to 50 mol. % Na_2O for temps. from 760 to 1420° exactly satisfy the equation $\log \eta = A + (\alpha/T^2)$. The values of $\alpha_1 \times 10^6$ vary from 5.0 for 50 mol. % SiO_2 to 5.61 at 66.7% and 6.10 at 77%; the curve for A with respect to compn. also consists of two straight lines intersecting at $A = -0.38$ at 66.7%; for 50% $A = -1.5$, 77%, -0.05. The minima of $\log \eta$ observed by Preston could not be found. Like the results of Lillie (*C. A.* 23, 5551) these results fail to support Preston's view of retarded establishment of mol. equil. in glass melts.

F. H. Rathmann

SKORNYAKOV, M. M.

USSR/Chemical Technology. Chemical Products and Their Application -- Silicates. Glass. Ceramics. Binders, I-9

Abst Journal: Referat Zhur - Khimiya, No 2, 1957, 5176

Author: Skornyakov, M. M.

Institution: Academy of Sciences USSR

Title: Viscosity of Glasses Above and Below Liquidus Temperature

Original Publication: Sb. Stroyenlye stekla, M.-L., AN SSSR, 1955, 256-257

Abstract: It is pointed out that below and above the liquidus temperature different laws of viscosity variation with temperature are effective. The author correlates this fact with the formation of enlarged aggregates in the glass-crystallites. The crystallites thus formed are incorporated as new elements in the structural network of the glass, which causes a deviation of the dependence of $\lg \eta$ on $1/T^2$, from a linear, below liquidus temperature.

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SKORNYAKOV, M. M.

15

The acid polishing of glass. M. M. Skornyakov. *Steklo i Keram.* 13, No. 3, 14–16(1956). The simple technique used in the study of the acid polishing of glass involved dipping sheets 80 × 30 × 2 mm. into mixts. of HF soln. (d. 1.13) and H_2SO_4 (d. 1.84) graduated from (1) 80–20, (2) 70–30, etc., to (7) 20–80% by wt. Immersion from 2 to 10 sec. repeated from 5 to 30 times and washing for 5 to 6 sec. was followed by hand rubbing. The specimens of glass tested were (a) a lime-soda of 75% SiO_2, 11% CaO and 15% Na_2O; (b) a lime-soda-potash with 73.5% SiO_2, 8.5% CaO, 12.0% Na_2O, and 6% K_2O; (c) a Pb crystal with 53.0% SiO_2, 35.0% PbO, 9.0% Na_2O, and 14.0% K_2O; and (d) a Ba crystal with 58.0% SiO_2, 5.0% ZnO, 18.0% BaO, 8.0% Na_2O, 15.0% K_2O, and 0.3% Sb_2O_3. The result of the chem. action is the formation of a dense film of salts on the glass surface, not completely dissolved and removed by washing, which serves as partial protection against further corrosion. As a result the glass loses its original "fire" luster and acquires a "priming" surface. Interchange of the 4 parameters, type of glass, compn. of the acid mixt., and no. and duration of the immersions sets up conditions whose effects are reported in detail. For example, 30 immersions in soln. No. 4 gives the lime-soda glass a satisfactory polish, while the lime-soda-potash under the same conditions acquires an even better surface. Soln. No. 5 is inferior to No. 4 and as the concn. of H_2SO_4 goes up in Nos. 6 and 7 the polish declines sharply. For the Pb and Ba crystal glasses soln. No. 5 is recommended. In general, the degree of polish is a function of the no. of immersions, whose duration should not exceed 2 sec. Increase of the time to 5–10 sec. raises the amt. and increases the depth of the priming. With the no. immersions equal the quality of polish assumed by the glass classified by type follows the order, Ba crystal, Pb crystal, lime-soda-potash, and lime-soda. H. L. Olin

SKORNYAKOV, M.M.

72-2-7/20

AUTHOR: Skornyakov, M.M.

TITLE: The Chemical Polishing of Crystal Products (Khimicheskaya polirovka khrustal'nykh izdeliy).

PERIODICAL: Steklo i Keramika, 1958, Nr 2, pp. 18-20 (USSR)

ABSTRACT: In order to determine the suitability of various mixtures of hydrofluoric- and nitric acid for the polishing of crystal products special tests were carried out, which are described in detail. The test mixtures of the acids may be seen from table 1, and the test results from table 2. Fig. 1 shows that the layer thickness of the glass changes in proportion to the time during which the mixture of acids acts in the course of the first three hours. Later, this directly proportioned dependence is disturbed by salts which had not dissolved and had settled on the glass surface, so that the dissolution of glass develops in a non-uniform manner. The process of chemical glass polishing is described in detail in the further course, and it is said that polishing velocity depends not only on the hydrofluoric acid content in the mixture but also on the quantity of salts forming in one time unit and their solubility in the mixture and water. If glass polishing is carried out by a mixture of hydrofluoric- and sulphuric acid undissoluble salts are formed which settle in the

Card 1/2

[illegible] tables.

ASSOCIATION: [illegible]

SKORNYAKOV, M.M.

Conditions for obtaining fast-striking gold ruby glass. Stek.i ker. 18 no.5:12-14 My '61. (MIRA 14:5)

(Glass, Colored)

ACCESSION NR: AT4019304 S/0000/63/003/001/0141/0145

AUTHOR: Pavlova, G. A.; Skornyakov, M. M.; Chistoserdov, V. G.

TITLE: An investigation of the electrical properties of some glasses and glassy-crystalline materials based on the lithium oxide-aluminum oxide-silicon dioxide system

SOURCE: Simpozium po stekloobraznomu sostoyaniyu. Leningrad, 1962. Stekloobraznoye sostoyaniye, vy*p. 1: Katalizirovannaya kristallizatsiya stekla (Vitreous state, no. 1: Catalyzing crystallization of glass). Trudy* simpoziuma, v. 3, no. 1. Moscow, Izd-vo AN SSSR, 1963, 141-145

TOPIC TAGS: glass, glassy-crystalline material, lithium glass, lithium aluminosilicate, photosensitivity, insulation, dielectric loss, electrical property

ABSTRACT: The electrical insulating properties of glassy-crystalline materials obtained from photosensitive glasses of the Li_2O-Al_2O_3-SiO_2 system can be increased considerably by decreasing the Al_2O_3 concentration and replacing SiO_2 with BaO, SrO, and CaO. After crystallization, the dielectric loss of lithium aluminosilicate glasses can decrease, increase, or remain the same as in the original glass, if the lithium ions are contained in the composition of the crystalline phase. The specific resistance of the crystalline material, however, is always

Card 1/2

SALTOVSKAYA, V., inzhener; SKORNYAKOV, N., kapitan dal'nego plavaniya.

Why did the ocean seiner perish. Mor.flot 16 no.9:9-10 S '56.
(MLRA 9:10)

1.Minrybprom SSSR.
(Trawls and trawling)

SKOR Y KOV, M.V.

Effektivnaia i bezopasnaia chistka skvazhin zhelonkami (Effective and safe cleaning of wells with sludge pumps). Baku, Aznefteizdat, 1953. 52 p.

SO: Monthly List of Russian Accessions, Vol. 7, No. 5, August 1954

MIRSALAYEV, Salam Beyuk; SKORNYAKOV, MIKHAIL VLADIMIROVICH; BERLIN, GEORGIY SEMENOVICH; TRAYNIN, YEFIM ABRAMOVICH; NOVIKOV, M.M., redaktor; TROFIMOV, A.V., technicheskiy redaktor.

[Practical handbook for major and underground repairing of wells] Prakticheskoe rukovodstvo po kapital'nomu i podzemnomu remontu skvazhin. Moskva, Gos. nauchno-tekhn. izd-vo neftianoi i goenotoplivnoi lit-ry, 1955. 275 p. [Microfilm]. (Oil wells--Equipment and supplies--Repairing) (MLRA 8:7)

MANVELYAN, E.G., inzhener; SKORNYAKOV, M.V., inzhener; ESTRIN, R.Ya., inzhener.

Double-seat supports used in repairing. Bezop. truda v prom. 1 no.2: 27-28 F '57. (MLRA 10:4)
(Oil fields--Equipment and supply)

SULTANOV, M.Kh.; SKORNYAKOV, M.V.; MUSAELYANTS, R.N.; BAYTUGANTI, Ye.G.

Safety problems in using casing lines. Trudy VNIITB no.11:3-12 '59. (MIRA 15:5)

(Oil wells--Equipment and supplies)

MIRSALAYEV, Salam Beyuk; SKORNYAKOV, Mikhail Vladimirovich; AMIYAN, V.A., red.

[Failures and troubles in major repairs of wells] Avariia i oslozhneniia pri kapital'nom remonte skvazhin. Moskva, Nedra, 1965. 84 p. (MIRA 18:10)

L 11220-67 EWT(d)/FSS-2 TCH

ACC NR: AP6029344 (A) SOURCE CODE: UR/0256/66/000/006/0019/0025

AUTHOR: Skornyakov, N. D. (Air Force major general; Docent); Kontorov, D. S. (Engineer; Colonel, Doctor of technical sciences)

ORG: None

TITLE: Studies in system engineering

SOURCE: Vestnik protivovozdushnoy oborony, no. 6, 1966, 19-25

TOPIC TAGS: air defense system, specialized training

ABSTRACT: Stressing the importance of a modern approach to the engineering education of commanding officers dealing with complex air defense systems, the authors present a general review of essential elements on which the studies of system engineering are based. General requirements for these studies are considered by dividing the air defense system in three main functional interrelated groups covering the use of combat weapons, means of information and control equipment. The approach of the commanding officer to the study of these three basic functions is discussed including the selection of optimal offensive or defensive methods, the evaluation of probable enemy actions and the possible coordination of three basic functional groups. In connection with this coordination, three different systems of functioning are diagrammatically represented. The first system of a centralized type has one control center collecting all information and actuating all

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SKORNYAKOV, N. N.

Metallurgical Abst.
Vol. 21 May 1954
Properties of Metals

*On the Effect of Certain Dissolved Elements on the Frontal Diffusion of Silver into Polycrystalline Copper. VV. I. Arkharov, S. I. Ivanovskaya, and N. N. Skornyakov (*Doklady Akad. Nauk S.S.S.R.*, 1953, 89, (4), 669–672). —[In Russian]. The effects on the diffusion of Ag of the presence of high concentrations of Be, Sb, or Fe in the grain boundaries of Cu (even though the overall concentration of the addn. elements is low) were studied metallographically. Be retards the diffusion in the grain boundaries, but the effect is masked by the diffusion within the grains, and the diffusion zone is smaller than that for pure Cu. Sb and Fe accelerate diffusion and cause penetration along the grain boundaries, which is more intense in the case of Fe. The effects of varying mixtures of the three addn. elements were studied, and it was shown that in all cases one of the elements had a predominant effect. (Translated by the U.S. National Science Foundation (NSF-tr-58)).—D. M. P.

SKORNYAKOV, N. N.

259T18

USSR/Metallurgy - Solid Solutions 11 Apr 53
Intercrystalline Adsorption

"On Changes in the Lattice Parameter of Polycrystalline Solid Solutions in Connection With Intercrystalline Internal Adsorption," V. I. Arkharov, N. N. Skornyakov, Inst of Phys of Metals, Ural Affiliate, Acad Sci USSR

DAN SSSR, Vol 89, No 5, pp 841-844

Discusses method for studying intercrystalline internal adsorption by comparative X-ray measurings

259T18

of lattice parameter of solid soln in its coarse-grain and fine-grain states with same content of addn. Alloys of Cu with Sb, Be, and Fe at various combinations of these addns and with their concns varied were used in expts, results of which are tabulated. Presented by Acad I. P. Bardin. 12 Jan 53.

Evaluation
B-76507,
25 Jun 54

SKORNYAKOV, N. N. 259T20

USSR/Metallurgy - Nonferrous Alloys, 21 Apr 53
Aging

"Concerning the Causes of the Modifying Effect of Small Dissolved Additions on the Kinetics of Aging in Alloys," V. I. Arkharov, B. N. Varskoy, N. N. Skornyakov, Inst of the Physics of Metals, Ural Affiliate, Acad Sci USSR

DAN SSSR, Vol 89, No 6, pp 1003-1006

Investigates accelerating effect of Sb on aging of Cu-Ag alloys and similar effect of Ag and Zn on aging process in Al-base 4% Cu-alloy. Concludes

259T20

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that acceleration of aging process in all cases is attributed to internal adsorption of small additions. X-ray method for studying changes in alloys was used in investigation. Presented by Acad I. P. Bardin 12 Jan 53.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001651110011-4"

SKORNYAKOV, N. N.

Metal

Influence of certain dissolved additions on silver diffusion into polycrystalline copper. V. I. Arkharov, S. I. Ivanovskaya, and N. N. Skornyakov. *Trudy Inst. Fiz. Metal. Akad. Nauk S.S.S.R., Ural. Filial* 1955, No. 16, 69–74; cf. *C.A.* 48, 8716*d*.—Electrolytic Cu was alloyed with 0.001–0.38% Fe, with 0.18–0.52% Sb, with 0.05–0.5 Mg (added), with 0.5% Cd and with combinations of Fe and Sb, Sb-Be, and with Sb-Be-Fe. A cavity was drilled in a sample, deeply etched to remove the effects of cold-working, filled tightly with Ag chips, closed, and heated at 500–600°, the temp. being selected to fall below the m.p. of the corresponding alloys. Etched with H_2O_2-NH_4OH soln. specimens showed that Fe, Mg, Sb, Be, and Cd concentrate at the grain boundaries being horophilic to Cu and help Ag diffusion along grain boundaries, each element having a characteristic effect on the appearance of Ag diffusion path. In combinations, one element usually predominates.

J. D. Gat

SKORNYAKOV, N.N.

Change in the lattice parameter of polycrystalline solid solutions as a function of intercrystalline adsorption. V. I. Arkharov and N. N. Skornyakov. *Trudy Inst. Fiz. Metal., Akad. Nauk S.S.S.R., Ural. Filial* 1955, No. 16, 75-81; cf. *C.A.*, 48, 7073c.—Excess energy possessed by cryst. boundaries, i.e. intercryst. transition zones, is reduced by substituting atoms of horophilic impurities (cf. *C.A.* 49, 15339a) for those of the basic compound of the solid soln. The thickness of these transition zones is very small; this interferes with their direct study and that of intercryst. adsorption. A method is presented for detg. this thickness. Since horophilic elements conc. at the surface of crystallites, their concn. in the body of crystals becomes smaller, and this difference depends on the surface available, i.e. is inversely proportional to the grain size. Lowering of the alloy concn. changes correspondingly the space lattice of crystals, which can be measured by the x-ray method. Electrolytic Cu was alloyed with 0.2-4.0% Sb, 0.02-0.2 Be, 0.001-0.1 Fe, either separately or in combination, rolled into bars, annealed, and the range of grain sizes developed by cold-working and annealing was detd. Grain size was measured under a microscope, and the corresponding space lattice by x-rays. Absorption behavior of these elements is discussed. Knowledge of grain dimensions permits calcn. of the surface. Space lattice parameter is proportional to the concn. of the impurity. When they are known, the lowering of alloy concn. and, therefore, the quantity of horophilic element passing to the boundaries can be detd. By assuming its concn. in the transition zone equal to the satn. point at a given temp., the mass of the solid soln. consumed in increasing the extent of the transition zone is found; and comparing it with the increase of the surface area gives the thickness of the transition layer. For Cu it ranges between 350 and 900 A.

I. D. Gal